

MAPEPROOF AL AP

Fully bonded HDPE membrane for waterproofing underground structures



WHERE TO USE

Horizontal and vertical waterproofing prior to pouring concrete in underground structures such as:

- car parks and garages;
- underground environments in general;
- swimming pools, storage tanks and basins;
- underpasses.

Mapeproof AL AP can be applied underneath foundations, on formworks (pre-cast), against diaphragms, soldier pile walls, pile walls or other excavation structures.

ADVANTAGES

- **Mapeproof AL AP** is a robust membrane that is highly resistant to both puncturing and tearing.
- **Mapeproof AL AP**, once concrete has been poured, forms a monolithic bond with it and remains perfectly bonded over time.
- **Mapeproof AL AP** is a waterproofing system that becomes fully bonded to poured concrete. It prevents water from migrating laterally between the foundation structure and the membrane.
- Completely watertight overlaps.
- **Mapeproof AL AP** is cold applied (no heat and/or naked flames are required), before installing steel reinforcement and pouring concrete and does not require a protective layer.

TECHNICAL CHARACTERISTICS

Mapeproof AL AP is a waterproofing membrane made up of a synthetic HDPE sheet with an adhesive side covered with a pressure sensitive protective coating.

When it comes into contact with poured concrete, it forms a tough bond with it.

Mapeproof AL AP is resistant to aggressive natural agents normally found in groundwater and soil. It is durable and resistant to ageing by UV rays during normal site operations.

Mapeproof AL AP provides an effective barrier to groundwater, soil moisture, radon and methan gas.

Mapeproof AL AP meets the requirements of EN 13967 ("Flexible sheets for waterproofing - Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet").

System components

Mapeproof AL AP is a waterproofing membrane completed by other products necessary to create a watertight system applicable to all the construction features of the site. In detail, these products are:

- **Mapeproof AL Tape D10 AP**, double-sided adhesive tape for joining two adjacent sheets;
- **Mapeproof Liquid Membrane**, polyurethane liquid membrane for sealing, filling and detailing.

APPLICATION PROCEDURE

Preparation of the substrate

The substrate must be sound and stable, it may be damp but there must be no standing water. The surfaces on which **Mapeproof AL AP** is to be applied must be even and have no large protruding areas or hollows. Substrates suitable for applying **Mapeproof AL AP** include concrete, formworks, rigid insulating panels and wooden panels.

Application of the product

▪ Horizontal surfaces

Install a regulating layer of lean concrete on the ground to create an even layer on which to apply the membrane. Place **Mapeproof AL AP** over the horizontal surface and run it up along the side walls, with the HDPE side in contact with the substrate.

Overlap the sheets lengthways and bond them together along the self-adhesive edges. Seal joints between the ends of rolls with **Mapeproof AL Tape D10 AP**.

Before positioning any rebar and pouring the concrete:

- make sure all the joints are well bonded. If any of the joints are not bonded correctly, go over those areas with **Mapeproof AL Tape D10 AP**;
- remove the protective film on the adhesive side of **Mapeproof AL AP**.

▪ Vertical retaining walls before pouring concrete

The surface where **Mapeproof AL AP** is to be installed must be flat, it should not be too rough or have large hollows. It is therefore necessary to wash the surfaces with water jets and level off the installation bed and the ends of the tie-rods by applying **Mapegrout T60**, fibre-reinforced controlled-shrinkage sulphate-resistant thixotropic mortar for repairing concrete, to be admixed with **Mapecure SRA** in the percentage of 0.25%.

In the case of diaphragms, micro-piles and secant piles with a particularly rough finish, apart from levelling off the surfaces as described above, it is also recommended to use a protective layer such as **Polifond Kit** by Polyglass S.p.A. Then waterproof all the side walls by applying **Mapeproof AL AP** starting at the top of the walls and working downwards, until it joints in with the strip of **Mapeproof AL AP** at the bottom of the walls, before pouring the concrete for the foundation slab.

After applying the waterproofing system, and before pouring the concrete:

- make sure all the overlaps and joints are well bonded. If any of the joints are not bonded correctly, go over those areas with **Mapeproof AL Tape D10 AP**;
- remove the protective film on the adhesive side of **Mapeproof AL AP**.

Between each pour of concrete, the construction joint that forms must be sealed with **Idrostop**, hydro-expanding acrylic profile to be placed at the midpoint of the construction joint.



Removal of the protective film of Mapeproof AL AP

RECOMMENDATIONS

- **Mapeproof AL AP** must not be applied if there is water or standing water.
- If **Mapeproof AL AP** is accidentally damaged during normal site operations, repair the damage by inserting a piece of **Mapeproof AL AP** below (lean concrete/excavation work side) and fixing it at the top with **Mapeproof AL Tape D10 AP**, then seal it with **Mapeproof Liquid Membrane**.
- Leave the protective film attached to the adhesive side of **Mapeproof AL AP** to protect it if people walk over it and only remove the film before positioning the steel reinforcement.
- **Mapeproof AL AP** must be covered with concrete within 50 days (40 in hot climates) of its installation.
- When **Mapeproof AL AP** is applied prior to pouring concrete inside formworks, it is only possible to remove the formworks when the concrete reaches a compressive strength of 10 N/mm².
- In case of accidental accumulation of dust, sand and mud on the adhesive surface of **Mapeproof AL AP**, perform a surface washing with water jets to ensure correct bond to the subsequently poured concrete.

PACKAGING

Mapeproof AL AP is available in 20 m² rolls (1 m wide).

STORAGE

Mapeproof AL AP may be stored for 15 months, in its original packaging, in a dry place and at a temperature of +5°C to +35°C.

Do not stack pallets during transport and storage

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapeproof AL AP is an article and referring to the current European regulations (Reg. 1906/2007/EC - REACH) does not require the preparation of the Safety Data Sheet. During use it is recommended to wear protective gloves and goggles and follow the safety requirements of the workplace.

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

Mapeproof AL AP: flexible HDPE waterproofing membrane compliant with EN 13967

PRODUCT IDENTITY

Appearance/material:

- Side in contact with poured concrete: adhesive covered with a pressure-sensitive protective coating
- Side in contact with substrate: white HDPE

Width of roll:	1 m (0.925 m + 0.075 m of self-adhesive edging)
Nominal thickness:	1.2 mm
Weight:	1.2 kg/m ²

APPLICATION DATA

Application temperature:	0°C to +40°C
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FINAL PERFORMANCE

Watertightness (no lateral migration) according to ASTM D 5385 mod.:	pass at 7 bar
Radon gas diffusion coefficient (m ² s ⁻¹):	1,28 E-13
Methane gas permeability (ISO 7229):	21 ml/m ² *24 h
Dimensional stability (SS 374):	≤ 0.1%
Resistance to hydrostatic pressure (DIN 16726):	70 m
Tensile strength (SS 374):	≥ 25 MPa
Elongation at failure (SS 374):	> 900%
Peel adhesion to concrete (ASTM D 903):	> 2700 N/m ⁽¹⁾
Lap peel adhesion (ASTM D 1876):	> 1000 N/m
Puncture resistance (ASTM E 154):	≥ 1000 N
Water vapor transmission (ASTM E 96/E 96M):	< 0.1 g/24 h·m ²
Water absorption (ASTM D 570):	< 0.2%
Tensile strength (ASTM D 412):	> 15 MPa
Elongation at break (ASTM D 412):	> 500%

(1) Peel adhesion of membrane to concrete is measured at a rate of 152 mm/min at room temperature after 28 days curing

Performance characteristics	Test method	Requirements according to EN 13967	Performance of Mapeproof AL AP
Watertightness:	EN 1928 (method A)	24 hours at 60 kPa	pass
Visual defects:	EN 1850-2	none	none
Tensile strength:	EN 12311-2 (method B)	value declared by manufacturer	longitudinal: ≥ 15 N/mm ² transversal: ≥ 15 N/mm ²
Elongation at failure:			longitudinal: ≥ 400% transversal: ≥ 400%
Resistance to static loading (kg):	EN 12730		method B, 20 kg load: pass
Resistance to tearing (nail shank):	EN 12310-1		longitudinal: ≥ 200 N transversal: ≥ 500 N
Joints strength:	EN 12317-2		≥ 500 N/50 mm
Resistance to impact:	EN 12691	Euroclass	method A height of 500 mm: pass
Reaction to fire:	EN 13501-1		E

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website

www.mapei.com

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7534-6-2023-I en (IT)

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